Chemistry I-Standard

Scientific Notation & Basic Algebra Problem Set

**1. Convert each of the following into scientific notation:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| a) 3427 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | b) 0.00456 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | c) 123,453 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| d) 172 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | e) 0.000984 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | f) 0.502 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| g) 3100 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | h) 11400 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | i) 107.2 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| j) 0.0000455 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | k) 2205.2 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | l) 30.0 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**2. Convert each of the following into standard notation:**

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1.56 x 104 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | b) 0.56 x 10-2 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| c) 0.00259 x 105 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | d) 4.59x10-4  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| e) 0.00259 x 103 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  f) 0.0209 x 10-3 | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**3. Using the North Carolina Reference Tables, solve the following equations for the indicated variable:**

a) Equation 1 for “m”b) Equation 2 for “°C”

c) Equation 5 for “V1” d) Equation 9 for “Hv”

e) Equation 6 for “n” f) Equation 4 for “P2”

**4. Solve each equation for the unknown variable and then evaluate each expression using the values given:**

|  |  |
| --- | --- |
| a) \_\_\_\_\_\_\_ Equation 7 for “Liters of solution” | b) \_\_\_\_\_\_\_ Equation 8 for “ΔT” |
| (M = 4 M, moles = 6 moles)  | (q = 850J, m = 50g, Cp = 2.85J/g°C) |
|  |  |
|  |  |
| c) \_\_\_\_\_\_\_ Equation 15 for “[H+]” | d) \_\_\_\_\_\_\_ Equation 3 for “T2” |
| (pH = 8.23) | (P1 = 2.50atm, V1 = 5L, T1 = 100K, P2 = 1.25atm, and V2 = 2 L) |